

### Tomato Spotted Wilt

J. J. McRitchie<sup>1</sup>

Tomato spotted wilt virus (TSWV), a disease previously unreported in Florida, has been detected in tomato fields in Gadsden and Santa Rosa counties. This virus is unique in several respects: 1) it is the only member of its group based on particle morphology (3,4), 2) it has one of the broadest host ranges of any plant virus (6,7), 3) and it has an unusual vector: thrips (5). The presence of the disease in Florida was first suspected by a private plant pest scouting organization (C. Mellinger personal communication), and was subsequently verified by the University of Florida (T. Kucharek personal communication) and by the Division of Plant Industry.

**Symptoms.** Symptoms are most noticeable and diagnostic on immature tomato fruit. Green fruit show light green rings with raised centers, giving the fruit a lumpy appearance, and rendering them unmarketable (Fig. 1). Foliage of infected tomato plants shows a thickening of veins, downward curling of leaves, bronzing, and ring spotting. The entire plant is stunted. Hosts other than tomato may show differing symptoms, in part because of the many strains of the virus.



Fig. 1. Immature tomato fruit showing characteristic light green rings with raised centers caused by tomato spotted wilt virus.

---

<sup>1</sup>Plant Pathologist, Bureau of Plant Pathology, P. O. Box 1269, Gainesville, FL 32602

**Host Range.** The virus has world wide distribution in temperate and subtropical climates. Nearly 200 plant species representing 34 plant families, both monocots and dicots, are reported hosts of TSWV. Several annual and perennial weed hosts may serve as virus reservoirs. A few of the economically important hosts include tomato, potato, bell pepper, tobacco, lettuce, peanut, chrysanthemum, and papaya.

**Transmission.** The TSWV is transmitted by thrips, an uncommon virus vector. Nine species have been identified as vectors (1,2,5): Frankliniella fusca (Hinds), F. moultoni Hood, F. occidentalis (Pergande), F. schultzei (Trybom), F. tenuicornis (Uzel), Lithrips dorsalis Hood, Thrips setosus Moulton, and T. tabaci Lindeman. The virus is acquired only in the larval stage but may be transmitted throughout the adult stage. A 4-10-day incubation period occurs before the virus can be transmitted. Maximum transmission effectiveness is 22-30 days after acquisition. TSWV - infected weeds support larger thrips populations than healthy weeds, indicating that infected plants are more suitable hosts than healthy ones (2). The virus is sap transmissible in the laboratory but probably not in nature.

**Control.** With such a diverse host range, this disease is difficult to control. The elimination of bordering weed hosts would serve to reduce virus reservoirs. Disease resistance has been found in some hosts.

**Survey and Detection.** In immature tomato fruit look for circular light green rings with raised centers. Virus strain differences and the vast host range necessitate laboratory verification of the disease.

#### **Literature Cited.**

1. Allen, W. R., and A. B. Broadbent. 1986. Transmission of tomato spotted wilt virus in Ontario greenhouses by Frankliniella occidentalis. Can. J. Plant Pathol. 8:33-38.
2. Carter, W. 1962. Insects in Relation to Plant Disease. 2nd ed. John Wiley & Sons, New York. 759 p.
3. Francki, R. I. B., and T. Hatta. 1981. Tomato spotted wilt virus. In: Handbook of Plant Virus Infections and Comparative Diagnosis. E. Kurstak (ed.). 492-512. Elsevier/North-Holland Biomedical Press.
4. Francki, R. I. B., R. G. Milne, and T. Hatta. 1985. Atlas of Plant Viruses. Vol. 1. CRC Press, Inc., Boca Raton, FL. 222 p.
5. Harris, K., and K. Maramorosch. 1980. Vectors of Plant Pathogens. Academic Press, New York. 467 p.
6. Matthews, R. E. F. 1981. Plant Virology. Second ed. Academic Press, New York. 897 p.
7. Smith, K. M. 1972. A Textbook of Plant Virus Diseases. 3rd ed. Academic Press, New York. 897 p.

---

Contribution No. 601, Bureau of Plant Pathology

<p>This publication was issued at a cost of \$276.92 or .08 per copy to provide information on proper recognition of plant pests. PI86T-29</p>
--